

Curriculum Vitae
LUANA COLLOCA, MD, PhD

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Personal statement

I am currently investigating the mechanisms of placebo effects by using psychopharmacological, genetic and brain mapping approaches. In a relatively brief period, I have established a research team at NIMH with the support of NIMH and NCCAM exploring the behavioral and physiological mechanisms of placebo and nocebo effects. I have provided insights into the science, ethics and clinical applications of the placebo effect in medicine.

I have published more than 42 original articles, 12 book chapters and two books on the neurophysiological and translational aspects of the placebo and nocebo responses, publications that are well-cited in the biomedical literature. I hold an appointment as board member on the Placebo SIG, International Association for Study of Pain (IASP).

Education

M.D. Degree (1996-2002): University of Catanzaro Medical School, Catanzaro, Italy. Graduated *With Highest Honors*

Neuroscience Ph.D. (2002-2007): Department of Neuroscience, Neurophysiology, University of Turin Medical School, Turin, Italy. Graduated *with Highest Honors*

M.A. in Bioethics (2006-2008): University of Turin, Medical School, Italy. Graduated *with Highest Honors*

Postgraduate training:

Post-doctoral Fellowship (2007-2008): Department of Neuroscience, Medical School of Turin, Italy

Post-doctoral Fellowship (2008-2009): Brain Center, Karolinska Institute, Stockholm, Sweden

Senior Research Fellowship (2009-2011): Department of Bioethics, Clinical Center, National Institutes of Health, Bethesda, MD

Research Fellowship (2012-2014): National Institute of Mental Health (NIMH), National Institutes of Health, Bethesda, MD

Current Professional employment:

Research Fellow (Jan 2012-Nov 2014): National Institute of Mental Health (NIMH) based on a MOU with the NCCAM, Bethesda, MD

Adjunct Faculty (Jan 2012-present): Department of Bioethics, Clinical Center, National Institutes of Health, Bethesda, MD

Other professional experiences:

International Advisor (2011-present); Program in Placebo Studies & Therapeutic Encounter (PiPS) at the Harvard Medical School, Beth Israel Deaconess Medical Center, Boston, MA USA

International Advisor (2011-present) German Research Initiative on Placebo and Nocebo (FOR-1328)

Board Member (2013-present): Placebo Special Interest Group, IASP

Medical Board certification (2003-current): # 005449, Turin, Italy

Associate Professorship credentials (2014-2018): 06/D6 (Neurology); 05/D5 (Physiology) and 11/E1 (Psychology).

Professional society membership: International Association for the Study of Pain (IASP)
Society for Neuroscience

Awards and honors:

2010-2011 **High Performance Award** - Clinical Center, Department of Bioethics
NIH (BMAP with highest scores)

2009 **European Federation of IASP Chapter (EFIC)** & Grunenthal Award 2008

Ronald Dubner International Research Prize - International Association for the
Study of Pain (IASP)

2006 **Award of PsychoNeuroImmunology Research Society (PNIRS) for Young
Neuroscientist**

2006 **Award of American Psychosomatic Society (APS)** for Young Neuroscientist

2005 **Award of Associazione Italiana Studio Dolore (AISD)**

2003 **Award of Lega Italiana Malattie Piramidali ed Extrapiramidali (LIMPE)**

Professional Service:

Ad-hoc reviewer of European and International **grant applications** (e.g. MRC,
UK, ISF, and IASP)

Ad-hoc reviewer for **scientific journals** such as:

- Annals of Internal Medicine
- BMC Family Practice
- BMC Medical Research Methodology
- British Journal of Pharmacology
- Clinical trials
- European Journal of Applied Physiology
- European Journal of Neurology
- European Journal of Pain
- International Journal of Medical Education
- JAMA
- Journal of Neuroscience
- Journal of Behavioural Medicine
- Journal of Pain
- Journal of Urology
- Lancet
- Molecular Psychiatry
- Pain
- Neuroimage
- Neuroscience
- Pharmacology & Therapeutics
- Progress in Neurology

Organization of symposia and meetings:

Minisymposium at the Society of Neuroscience - Minisymposium - Placebo analgesia at the Society of Neuroscience 2011, Washington, DC. November 12-16, 2011

Symposium at the 14th World Congress on Pain®, PLACEBO ANALGESIA AND NOCEBO HYPERALGESIA: FROM BENCH TO BEDSIDE August 27-31, 2012 in Milan, Italy.

International meeting at the National Institutes of Health – Using placebo responses in clinical practice: Is there a there, there? What do we need to know? Jan 19-20, 2012

Topical workshop at 15th World Congress on Pain - Placebo Analgesia: Understanding the mechanisms to target better therapeutic strategies. Buenos Aires, Argentina, October 6-11, 2014

Research:

Selected Research Grants (PI only)

Collaborative Research Grant -- International Association Study of Pain (IASP), Brain imaging of the placebo analgesia. years 2007-2009. (15.000 dollars)

Grant Ricerca Finalizzata -- Regione Piemonte – Placebo analgesia in schizophrenic patients. years 2008-2009. (12.000 euros)

Grant Ricerca Finalizzata -- Regione Piemonte – Open-hidden administration of duodopa in Parkinsonian patients. – years 2009-2011. (10.000 euros)

Early Research Grant – International Association Study of Pain (IASP) - Placebo analgesia: modulation induced by oxytocin. years 2010. (20.000 dollars)

Grant by European Federation IASP Chapter (EFIC) – Placebo analgesia and social learning. years 2009-2011. (25,000 euros)

Intramural research support –Neurobiology of placebo analgesia. Fiscal year 2012-2014 (640.000 dollars based on a MOU between NIMH and NCCAM)

Publications

1. **Colloca L**, Jonas W, Killen J, Miller FG, Shurtleff D. Re-evaluating placebo effects in medicine. *In press*
2. Petersen GL, Finnerup NB, **Colloca L**, Amanzio M, Price DD, Jensen TS, Vase L. The magnitude of nocebo effects in relation to pain: A systematic review. **Pain** 2014 *in press*
3. **Colloca L**, Grillon C. Understanding placebo and nocebo for pain management. **Curr Pain Headache Reports** 2014 *in press*
4. Au Yeung SC, Colagiuri B, Lovibond FP, **Colloca L**. Partial reinforcement, extinction, and placebo analgesia. **Pain** 2014; doi: 10.1016/j.pain.2014.02.022
5. **Colloca L**, Emotional modulation of placebo analgesia. **Pain** 2014; doi: 10.1016/j.pain.2014.01.009
6. Hunter T, Siess F, **Colloca L**. Socially-induced placebo *analgesia*: a comparison of a pre-recorded versus live face-to-face observation. **Eur J Pain** 2014; doi: 10.1002/j.1532-2149.2013.00436.x
7. Klinger R, **Colloca L**, Bingel U, Flor H. Placebo analgesia: Clinical applications. **Pain** 2014; doi: 10.1016/j.pain.2013.12.007
8. Brody H, **Colloca L**. Patient autonomy and provider beneficence are compatible. **Hastings Cent Rep.** 2013 Nov-Dec;43(6):6
9. **Colloca L**, Klinger R, Flor H, Bingel U. Response to the Letter to the Editor by L.A. Avila **Pain** 2013: 154(11):2572
10. Hull SC, **Colloca L**, Avins A, Gordon P, Somkin CP, Silver P, Kaptchuk TJ, Miller FG. A Survey of Patients' Attitudes about the Use of Placebo Treatments: Telephone survey. **BMJ** 2013; 346:f3757
11. **Colloca L**, Klinger R, Flor H, Bingel U. Placebo analgesia: Psychological and neurobiological mechanisms. **Pain** 2013; 154 (4): 153-157

12. Horin A, Lee K. **Colloca L.** Placebo effects in therapeutic outcomes. **Curr Clin Pharmacol** 2013 Vol. 08
13. **Colloca L.** The nocebo effect: should we be worried? **Clinical Investigation** 2013, 3(1):5-7
14. **Colloca L.** Finniss D. Nocebo effects, patient-clinician communication, and therapeutic outcomes. **JAMA** 2012;307(6):567-8. *Viewpoint*
15. Brody H, **Colloca L**, Miller FG. The placebo phenomenon: Implications for the Ethics of shared decision-making. **JGIM** 2012 27(6):739-42
16. **Colloca L.** The influence of the nocebo effect in clinical trials. **J Clin Trials** 2012:4 61–68
17. Meissner K, Bingel U, **Colloca L**, Wager T, Watson A., Flaten M. The placebo effect: Advances from different methodological approaches. **J Neurosci** 31(45):16117-16124. - *co-first author*
18. **Colloca L**, Miller FG. The nocebo effect and its relevance for clinical practice. **Psychosom Med** 2011, 73(7):598-603
19. **Colloca L**, Miller FG. Harnessing the placebo effect: the need for translational research. **Phil Trans R. Soc. B, Biological Sciences**, 2011:366 1922-1930
20. **Colloca L**, Miller FG. How placebo responses are formed: A learning perspective. **Phil Trans R. Soc. B, Biological Sciences** 2011:366 1859-1869
21. **Colloca L.** Learning placebo analgesia in sequential trials: What are the Pros and Cons? **Pain** 2011: 152: 1215–1216
22. Meissner K. Kohls N, **Colloca L.** Introduction to placebo effects in medicine: mechanisms and clinical implications. **Phil Trans R. Soc. B, Biological Sciences** 2011; 366 1783-1789

23. Miller FG, **Colloca L**. The placebo phenomenon and medical ethics: Rethinking the relationship between informed consent and risk-benefit assessment. **Theor Med Bioeth** 2011 Aug;32(4):229-43
24. **Colloca L**, Miller F. Role of Expectations in Health. **Curr Opin Psych** 2011;24(2):149-55
25. Bingel U, **Colloca L**, Vase L. Mechanisms and clinical implications of the placebo effect – Is there a potential for elderly? **Gerontology** 2011;57(4):354-63. - *co-first author*
26. Miller FG, **Colloca L**. Semiotics and the placebo effect. **Perspect Biol Med** 2010; 53:509-16
27. Lui F, **Colloca L**, Duzzi D, Anchisi D, Benedetti F, Porro CA. Neural bases of conditioned placebo analgesia. **Pain** 2010;151:815-823. - *co-first author*
28. **Colloca L**, Petrovic P, Wager TD, Ingvar M, Benedetti F. How the number of learning trials influences placebo and nocebo response. **Pain** 2010; 151:430-439
29. Zibetti M, Rizzi L. **Colloca L**, Cinquepalmi A, Angrisano S, Castelli L, Lanotte M, Lopiano L. Probable REM sleep behaviour disorder and STN-DBS outcome in Parkinson's disease. **Parkinsonism Relat Disord** 2010 May;16(4):265-9
30. **Colloca L**, Benedetti F. Placebo analgesia induced by social observational learning. **Pain**, 2009, 144:28-34
 - a. Editorial: Robinson ME, Price DD. Placebo analgesia: Widening the scope of measured influences. **Pain** 2009;144(1-2):5-6.
 - b. Editorial: Porro CA. Open your mind to placebo conditioning. **Pain** 2009;145(1-2):2-3.
31. Miller FG, **Colloca L**. The legitimacy of placebo treatments in clinical practice: evidence and ethics. **Am J Bioeth** 2009; 9(12).39-47

32. Miller FG, **Colloca L**, Kaptchuk TJ. The placebo effect: illness and interpersonal healing. **Perspect Biol Med** 2009, 52(4):518-39
33. Benedetti F, Lanotte M, **Colloca L**, Ducati A, Zibetti M, Lopiano L. Electrophysiological properties of thalamic, subthalamic, and nigral neurons during the anti-Parkinsonian placebo response. **J Physiol** 2009, 587(Pt15):3869-83
34. **Colloca L**, Tinazzi M, Recchia S, Le Pera D, Fiaschi A, Benedetti F, Valeriani M. Learning potentiates neurophysiological and behavioral placebo responses. **Pain**, 2008, 139:306-314
35. **Colloca L**, Sigaud M, Benedetti F. The role of learning in the nocebo and placebo effect. **Pain**, 2008; 136:211-218
 - a. Editorial: Petrovic P. Placebo and nocebo hyperalgesia – Two sides of the same coin? **Pain** 2008 May;136(1-2):5-6
36. **Colloca L**, Benedetti F, Porro AC. Experimental designs and brain mapping approaches for studying the placebo analgesic effect. **Eur J Appl Physiol**, 2008; 102(4):371-80
37. Benedetti F, Pollo A, **Colloca L**. Opioid-mediated placebo responses boost pain endurance and physical performance – Is it doping in sport competitions? **J Neurosci**, 2007; 27(44):11934-11939
38. **Colloca L**, Benedetti F. Nocebo hyperalgesia: How anxiety is turned into pain. **Curr Opin Anaesthesiol**, 2007; 20(5):435-9
39. Benedetti F, Lanotte M, Lopiano L, **Colloca L**. When words are painful: Unravelling the mechanisms of the nocebo effect. **Neuroscience**, 2007; 147:260-271
40. **Colloca L**, Benedetti F, Bergamasco B, Vighetti S, Zibetti M, Ducati A, Lanotte M, Lopiano L. Electroencephalographic responses to intraoperative subthalamic stimulation. **Neuroreport**, 2006; 17(14):1465-8

41. **Colloca L**, Benedetti F. How prior experience shapes placebo analgesia. **Pain** 2006; 124 (1-2):126-33
42. **Colloca L**, Benedetti F, Pollo A. Repeatability of autonomic responses to pain anticipation and pain stimulation. **Eur J Pain** 2006 10(7):659-65
43. **Colloca L**, Benedetti F. Placebos and painkillers: is mind as really as matter? **Nature Neurosci Review**, 2005; 6(7):545-52
44. **Colloca L**, Lopiano L, Benedetti F, Lanotte M. The placebo response in conditions other than pain. **Seminars in Pain Med**, 2005, 3(1), 43-47
45. Lanotte M, Lopiano L, Torre E, Bergamasco B, **Colloca L**, Benedetti L. Expectation enhances autonomic responses to stimulation of the human subthalamic limbic region. **Brain Behav Immun** 2005;19(6):500-9
46. **Colloca L**, Lopiano L, Lanotte M, Benedetti F. Overt versus covert treatment for pain, anxiety, and Parkinson's disease. **Lancet Neurol** 2004; 3(11):679-84.
47. Benedetti F, **Colloca L**, Torre E, Lanotte M, Melcarne A, Pesare M, Bergamasco B, Lopiano L. Placebo-responsive Parkinson patients show decreased activity in single neurons of subthalamic nucleus. **Nature Neurosci**, 2004; 7:587-588
48. Benedetti F, **Colloca L**, Lanotte M, Melcarne A, Torre E, Bergamasco B, Lopiano L. Autonomic and emotional responses to open-hidden paradigm to stimulation of subthalamic region. **Brain Research Bull** 2004, 63, 203-211
49. Benedetti F, **Colloca L**. Placebo-induced analgesia: methodology, neurobiology, clinical use, and ethics. **Review in Analgesia**, 2004, 7, 129-143

Books

1. **Colloca L**. Editor. The many facets of the placebo effect: From neuronal mechanism to clinical and ethical implications. *Under review*
2. **Colloca L**. Flaten M., Meissner K. Editors. Placebo and Pain: From bench to bedside. **Elsevier**, Oxford, UK – 2013 – ISBN: 978-0-12-397928-5

3. Miller F, **Colloca L**, Crouch RA, **Kaptchuk TJ**. Editors. Placebo: A reader. **Johns Hopkins University Press** – 2013 - ISBN: 978-1-4214-0866-8

Book chapters

1. **Colloca L**, Placebos. In: Encyclopaedia of Human Biology 3th Edition. **Elsevier**, Oxford, UK 2014
2. **Colloca L**. Placebo, nocebo and learning. In: Placebo. Benedetti F, Enk P, Frisald E, Schedlowski M, eds. *Handbook of Experimental Pharmacology (HEP)*, **Springer** 2014 *in press*
3. **Colloca L**, Horin A., Finniss D. Placebo Effects. In: Introduction to Pain and Nervous System Disorders. Battaglia A. ed., **Wiley**, UK *in press*
4. **Colloca L**. Placebo and Pain. In: La natura, l'uomo, il dolore. Sotgiu M.L. L'arco di Giano, 76 Rivista di Medical humanities, Edizioni Panorama della Sanita 2013, 101-108. Roma, IT.
5. **Colloca L**, Jobes C, Liang T, Simmons K. Placebos. In: Important Considerations for Clinical Trial Methodologies. Berger VW, Zhang C (Eds). **Future Science** 2013, 78–88 London, UK
6. **Colloca L**. How placebo responses are formed: From bench to bedside. In: Pain and Placebo: From Bench to bedside. Colloca L. Flaten M., Meissner K., eds. **Elsevier** 2013, 137-148. Oxford, UK - ISBN 978-0-12-397928-5
7. Flaten M, Meissner K, **Colloca L**. Methodology of placebo research. In: Pain and Placebo: From Bench to bedside. Colloca L. Flaten M., Meissner K., eds. **Elsevier** 2013, 149-157. Oxford, UK - ISBN 978-0-12-397928-5
8. Jonas, WB, Crawford C, Meissner K, **Colloca L**. The wound that heals - Placebo, pain and surgery. In: Pain and Placebo: From Bench to bedside. Colloca L. Flaten M., Meissner K., eds. **Elsevier** 2013, 227-233. Oxford, UK - ISBN 978-0-12-397928-5
9. **Colloca L**. Miller FG. Placebo and nocebo: Ethical challenges and solutions. In: Pain and Placebo: From Bench to bedside. Colloca L. Flaten M., Meissner K., eds. **Elsevier** 2013, 278-286. Oxford, UK - ISBN 978-0-12-397928-5

10. **Colloca L**, Benedetti F. Imaging placebo responses in the brain. In: Imaging in CNS Drug Discovery and Development: Implications for Disease and Therapy. Borsook, D.; Beccera, L.; Bullmore, E.; Hargreaves, R., eds. **Springer** 2009, 163-176. ISBN: 978-1-4419-0133-0
11. **Colloca L**, Finniss D, Benedetti F. Placebo and Nocebo. In the: Textbook of Clinical Pain Management 2E, Rice A, Howard R, Justins D, Miaskowski C, Newton-John T., eds. **Hodder Arnold**, vol. Practice & Procedures, London NW1 3BH, 2008, 499-513
12. **Colloca L**, Benedetti F. The placebo in clinical studies and in medical practice. In: Psychological methods of pain control: basic science and clinical perspectives. Price D. D., Bushnell C., eds. Seattle, WA: **IASP** 2004, 29,187-205

Invited lectures (40 out of 80)

1. **Placebo Analgesia: Understanding the mechanisms to target better therapeutic strategies.** Chair and speaker of the topical workshop on Placebo at 15th World Congress on Pain, Buenos Aires, Argentina, October 6-11, 2014
2. **Placebo and nocebo: An exploration of laboratory and clinical findings.** Invited Plenary Lecture, The French Chapter of IASP (SFETD), 14th Congress, City of Toulouse, France, November 20-21, 2014
3. **Pain and Placebo: From bench to bedside.** Invited talk at the Pain Seminar Series, Center for Pain Research & Innovation (CPRI), UNC School of Dentistry, Chapel Hill, North Carolina, USA, May 8, 2014 (45 min)
4. **Neurophysiology of placebo effects: Human cognition and learning mechanisms.** Invited seminar at the International School for Advanced Studies, SISSA, Trieste, Italy, April 8, 2014 (45 min)
5. **Placebo analgesia: How learning mechanisms shape somatosensorial perception.** Invited talk at the Center of Biomedical Research Excellence (COBRE), Maine, Portland, University of New England, April 2, 2014 (45 min)

6. **The placebo effect: An exploration of the psychophysiological effects.** Invited seminar at the Department of Integrative Physiology, Georgetown University, Washington, USA, March 20, 2014 (45 min)
7. **Neurobiological mechanisms of the placebo effect.** Invited talk at Fellows Afternoon Neuroscience Seminars (FANS), NIMH, National Institutes of Health, Bethesda, US, December 19, 2013 (25 min)
8. **Ethical considerations and limitations of placebo use in research and practice.** State-of-the-art lecture at the Placebo effekte in der Physiotherapie meeting, Waiblingen, Germany, Nov 23, 2013 (45 min)
9. **Placebo effects: From pain to psychiatric disorders.** Invited talk at the Third International Meeting of Mental Health, Jinhua, China, Nov 16, 2013 (45 min)
10. **Placebo analgesia: From bench to bedside.** Invited talk at the Seminar Series, Pain Research Center, School of Medicine, University of Pittsburgh, Pittsburgh, USA, Oct 2, 2013 (45 min)
11. **How expectations shape behaviors, brain responses, and clinical outcomes.** Invited talk at the NIAAA, LCTS, Journal Club, NIH, Bethesda, USA, Sept 18, 2013 (45 min)
12. **Neurobiological aspects of the placebo effect.** Invited talk at the Seminar Series, Department of Pharmacology and Physiology, Georgetown University, Washington, USA, Sept 3, 2013 (45 min)
13. **Nocebo effects: Neurophysiological mechanisms and clinical implications.** Invited talk at 'Pathophysiology and Clinical Pharmacology of Pain' INSERM U-987, Boulogne, France, Aug 30, 2013 (45 min)
14. **The dilemma of disclosing adverse events.** Invited talk at the meeting 'Research ethics: Current challenges in pre-clinical, clinical and public health research'. Hannover, Germany, Aug 26-30, 2013 (25 min)
15. **Re-evaluating the placebo effect in medicine.** Invited talk at NIH Clinical Center Grand Rounds for Clinical Fellows Series, NIH, Bethesda, MD, Aug 21, 2013 (45 min)
16. **Placebo analgesia: Psychological and neurophysiological aspects - *Chair*** and speaker at the Panel workshop - Predicting Placebo Responsiveness:

A Psychological, Neurophysiological And Neurobiochemical Approach - at NCDEU 2013 53rd Annual Meeting, Westin Diplomat, Hollywood Florida, May 28-31, 2013 (30 min)

17.The Placebo Effect: Psychological and Neurobiological aspects – Invited talk at the Catholic University of America, Department of Psychology, Washington, DC, USA, Feb 20th , 2013 (45 min)

18.Placebo, nocebo and learning mechanisms – at the International Conference “Progress in our understanding of the psychobiological and neurobiological mechanisms of the placebo and nocebo response”, University Hospital Tübingen, Germany, January 23-25, 2013 (35 min)

19.Rethinking the placebo effect in bioethics – Invited talk and chair at the American Society for Bioethics and Humanities (ASBH) Annual Meeting, Washington, DC, Oct 18-21, 2012 (15 min)

20.New insights on nocebo effects: a comprehensive overview - Invited talk at the European Academy of Craniomandibular Disorders meeting, September 6-8, 2012 in Paris, France (30 min)

21.Mechanisms of placebo and nocebo effects – Seminar at the University of Mannheim, Systems Neuroscience in Psychiatry Central Institute of Mental Health J5, Mannheim, Germany (45 min)

22.How placebo and nocebo responses are formed: contribution of verbal suggestions, conditioning, and social learning - Chair and speaker at the topical workshop - PLACEBO ANALGESIA AND NOCEBO HYPERALGESIA: FROM BENCH TO BEDSIDE at 14th World Congress on Pain®, August 27-31, 2012 in Milan, Italy (30 min)

23.Unravelling the mechanisms of the nocebo effect - Invited talk at the international conference "Beyond the Placebo: Biomedical, Clinical and Philosophical Aspects of the Placebo Effect". Ascona, Switzerland, August 23-25, 2012 (45 min)

24.Pain and Placebo - Invited talk at Pain Seminar Series, University of Maryland, Baltimore, August 31, 2012 (45 min)

25.Nocebo mechanisms and their implications for patient-physician communication - Invited talk at McGill University. May 24, 2012 (45 min)

26. **The neurobiology of the placebo effect** - Invited seminar at the Psychiatry Clinical Fellows Seminar Series, National Institute of Mental Health, NIH, Bethesda, April 10, 2012 (60 min)
27. **Ethics of placebos in medicine** - Seminar at the first year course of Bioethics, Department of Bioethics, National Institutes of Health, Bethesda, MD, USA, March 28, 2012 (60 min)
28. **Nocebo research: Implications for clinical trials and practice** - Invited talk at NIH workshop - Exploiting placebo responses in clinical practice: What do we need to know? NIH, Bethesda, MD, January 19-20, 2012 (20 min)
29. **Role of verbal suggestions, conditioning and social observation in placebo analgesia** - Invited talk at meeting – Placebo and Performance: Implications for Program, Practice and Policy - Uniformed Services University of the Health Sciences (USUHS) – Board of Regents, Bethesda, Maryland, Jan 19, 2012 (20 min)
30. **Placebo analgesia: Contribution of verbal suggestions, conditioning and social learning** – Speaker and organiser, Minisymposium at the Society of Neuroscience 2011, Washington, DC. November 12-16, 2011 (25 min)
31. **Effects of social observation in placebo analgesia** - 7TH CONGRESS OF THE EUROPEAN FEDERATION OF IASP® CHAPTERS (EFIC), Hamburg, Sept 22, 2011 (10 min)
32. **The science of placebo** - Grand Rounds Series Lectures at NCCAM, NIH, Bethesda, May 9, 2011 (50 min)
33. **The Placebo effect: Neurobiological and psychological aspects** - Grand Rounds Series Lecture at the University of Michigan, Department of Psychiatry, Ann Arbor, March 23, 2011 (50 min)
34. **Nocebo effect: from neurobiology to clinic** - Invited talk at the Placebo, Ritual and Healing Seminars Series, Beth Israel Deaconess Medical Center (BIDMC), Harvard Medical School, Boston, Dec 9, 2010 (45 min)
35. **Getting nocebo research into clinical practice** - Invited talk at Behavioral Medicine in Oncology Program, Hillman Cancer Center, UPMC, Pittsburgh, Oct 27, 2010 (60 min)

36. **Mind-brain interactions that are negative – Nocebo mechanisms and their clinical implications** – Invited talk at workshop talk at the SIG Symposium on Placebo, Montreal, Canada, Aug 29, 2010 (30 min)
37. **Placebo and nocebo: methodological, neurobiological and ethical aspects** - Invited talk at the Postgraduate Course “Diagnosis and Treatment of oral facial pain”, Consortium University of Cagliari and Bicocca University, Milan, Italy, March 26-27, 2010 (1 hour)
38. **Learning and the placebo effect: recent advances** - at the Division of Basic Neuroscience & Behavioral Research, National Institute on Drug Abuse (NIDA), Bethesda, MD, USA, March 19, 2010 (50 min)
39. **Learning and placebo analgesia: verbal suggestions, conditioning and social observation** - Invited talk at Osher Center, Harvard Medical School, Boston, Feb 25, 2010 (50 min)
40. **Placebo Analgesia Induced by Social Observational Learning** - Invited talk at the NIH Workshop - The Placebo Effect: Opportunities and Challenges, Bethesda, MD, USA, Jan 28-29, 2010 (20 min)